

## STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Steve Roberts

TDEC-DWS Knoxville FO

3711 Middlebrook Pike Knoxville, TN 37921

Lab ID: K00003520

**Knoxville Regional Laboratory** 

Sampling Agency: TDEC: Division of Water Supply

**Billing Code:** 

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

K00003520001

**Project Name:** 

Sample Description:

tion: Kingston WTP

Sampler Project Name: Finish

**Project Site No.:** 

Station No.:

**Date/Time Collected:** 

03/22/2010

08:45

Sampler's Name:

Geoff Klein

County: Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency:

Knoxville TDEC-DWS

Billing Code: Send Report To: 327.39-12 TDEC-DWS TDEC-DWS

Agency Invoiced: Priority Date:

04/02/2010

Date/Time Received:

03/23/2010 12:50

Received By:

Ken Hitchman

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other: Flow:

CFS

TEST: Digestion Metals METHOD: EPA 200.2							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Digestion Metals	03/24/2010			, , , ,	S Spence	3/24/2010	

TEST: ICP-MS	ME.	METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5.	M Pattanayek	3/24/2010
Barium	17	μg/L	2.5	5	M Pattanayek	3/24/2010
Beryllium	U	μg/L	0.11	1	M Pattanayek	3/24/2010
Cadmium	U	μg/L	0.41	1	M Pattanayek	3/24/2010
Chromium	U	μg/L	2.0	5	M Pattanayek	3/24/2010
Cobalt	0.062J	μg/L	0.04	1	M Pattanayek	3/24/2010
Lead	U	μg/L	0.10	1	M Pattanayek	3/24/2010
Manganese	U	μg/L	0.42	1	M Pattanayek	3/24/2010
Selenium	U	μg/L	1.3	5	M Pattanayek	3/24/2010
Thallium	0.21J	μg/L	0.03	1	M Pattanayek	3/24/2010
Vanadium	U	μg/L	3.4	5	M Pattanayek	3/24/2010

TEST: Mercury	METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.029	0.2	A Bass	3/25/2010	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003520002

**Project Name:** 

Sample Description:

Kingston WTP

Sampler Project Name: Raw

Project Site No.: Station No.:

Date/Time Collected:

03/22/2010 08:50

Sampler's Name: County:

Geoff Klein ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville TDEC-DWS

**Billing Code:** Send Report To: Agency Invoiced: 327.39-12 TDEC-DWS TDEC-DWS

**Priority Date:** Date/Time Received: 04/02/2010 03/23/2010 12:50

Received By:

Ken Hitchman

**Field Determinations** pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other: Flow:

CFS

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	03/24/2010				S Spence	3/24/2010

TEST: ICP-MS	ME <sup>-</sup>					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	3/24/2010
Barium	27	μg/L	2.5	5	M Pattanayek	3/24/2010
Beryllium	U	μg/L	0.11	1	M Pattanayek	3/24/2010
Cadmium	U	μg/L	0.41	1	M Pattanayek	3/24/2010
Chromium	U	μg/L	2.0	5	M Pattanayek	3/24/2010
Cobalt	0.53J	μg/L	0.04	1	M Pattanayek	3/24/2010
Lead	1.7	μg/L	0.10	1	M Pattanayek	3/24/2010
Manganese	180	μg/L	0.42	1	M Pattanayek	3/24/2010
Selenium	U	μg/L	1.3	5	M Pattanayek	3/24/2010
Thallium	0.14J	μg/L	0.03	1	M Pattanayek	3/24/2010
Vanadium	U	μg/L	3.4	5	M Pattanayek	3/24/2010

TEST: Mercury	METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.029	0.2	A Bass	3/25/2010	

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

MQL - Method Quantitation Limit

K00003520003

**Project Name:** 

Sample Description:

Rockwood WTP

Sampler Project Name: Raw

**Project Site No.:** 

Station No.:

**Date/Time Collected:** 

03/22/2010 09:25

Sampler's Name:

Geoff Klein

County: Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency:

Knoxville
TDEC-DWS

Billing Code: Send Report To: Agency Invoiced: 327.39-12 TDEC-DWS TDEC-DWS

Priority Date:
Date/Time Received:

04/02/2010

Danis and Day

03/23/2010 12:50

Received By:

Ken Hitchman

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other: Flow:

CFS

TEST: Digestion Metals	METHOD: EPA 200.2							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE		
Digestion Metals	03/24/2010		. 22	2000	S Spence	3/24/2010		

TEST: ICP-MS	ME	METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	3/24/2010
Barium	26	μg/L	2.5	5	M Pattanayek	3/24/2010
Beryllium	U	μg/L	0.11	1	M Pattanayek	3/24/2010
Cadmium	U	μg/L	0.41	1	M Pattanayek	3/24/2010
Chromium	U	μg/L	2.0	5	M Pattanayek	3/24/2010
Cobalt	0.097J	μg/L	0.04	1	M Pattanayek	3/24/2010
Lead	0.24J	μg/L	0.10	1	M Pattanayek	3/24/2010
Manganese	17	μg/L	0.42	1	M Pattanayek	3/24/2010
Selenium	U	μg/L	1.3	5	M Pattanayek	3/24/2010
Thallium	0.089J	μg/L	0.03	1	M Pattanayek	3/24/2010
Vanadium	U	μg/L	3.4	5	M Pattanayek	3/24/2010

TEST: Mercury	METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.029	0.2	A Bass	3/25/2010	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003520004

**Project Name:** 

Sample Description:

Rockwood WTP

Sampler Project Name: Finish

**Project Site No.:** 

Station No.:

Date/Time Collected:

03/22/2010 09:30

Sampler's Name:

Geoff Klein

County:

ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville

Billing Code: Send Report To: TDEC-DWS 327.39-12

Agency Invoiced: **Priority Date:** 

**TDEC-DWS** TDEC-DWS 04/02/2010

Date/Time Received:

03/23/2010 12:50

Received By:

Ken Hitchman

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

**CFS** 

TEST: Digestion Metals	METHOD: EPA 200.2							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE		
Digestion Metals	03/24/2010				S Spence	3/24/2010		

TEST: ICP-MS	ME	METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	3/24/2010
Barium	25	μg/L	2.5	5	M Pattanayek	3/24/2010
Beryllium	U	μg/L	0.11	1	M Pattanayek	3/24/2010
Cadmium	U	μg/L	0.41	1	M Pattanayek	3/24/2010
Chromium	U	μg/L	2.0	5	M Pattanayek	3/24/2010
Cobalt	0.058J	μg/L	0.04	1	M Pattanayek	3/24/2010
Lead	U	μg/L	0.10	1	M Pattanayek	3/24/2010
Manganese	0.42J	μg/L	0.42	1	M Pattanayek	3/24/2010
Selenium	U	μg/L	1.3	5	M Pattanayek	3/24/2010
Thallium	0.058J	μg/L	0.03	1	M Pattanayek	3/24/2010
Vanadium	U	μg/L	3.4	5	M Pattanayek	3/24/2010

TEST: Mercury	METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.029	0.2	A Bass	3/25/2010	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit



## STATE OF TENNESSEE **DEPARTMENT OF HEALTH ENVIRONMENTAL LABORATORIES**

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TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Steve Roberts

TDEC-DWS Knoxville FO

3711 Middlebrook Pike Knoxville, TN 37921

Lab ID: K00003520

**Knoxville Regional Laboratory** 

Sampling Agency: TDEC: Division of Water Supply

**Billing Code:** 

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

K00003520001

**Project Name:** 

**Sample Description:** 

Kingston WTP

Sampler Project Name: Finish

**Project Site No.:** 

**Station No.:** 

**Date/Time Collected:** 

03/22/2010 08:45

Sampler's Name:

Geoff Klein

County:

ROANE - 73

Sample Matrix: EFO:

Water

**Sampling Agency:** 

Knoxville

**Billing Code:** Send Report To: TDEC-DWS 327.39-12 **TDEC-DWS** 

Agency Invoiced: **Priority Date:** 

**TDEC-DWS** 04/02/2010

Date/Time Received:

03/23/2010 12:50

Received By:

Ken Hitchman

**Field Determinations** 

pH:

Chlorine, residual: Conductivity: Temperature: **Dissolved Oxygen:** 

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Alkalinity	60	mg/L	3.8	10	M Chen	3/25/2010	

TEST: Hardness, Calcium	WE.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	47	mg/L	0.7	1	M Chen	3/24/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003520002

**Project Name:** 

Sample Description:

Kingston WTP

Sampler Project Name: Raw

**Project Site No.:** 

**Station No.:** 

Date/Time Collected:

03/22/2010 08:50

Sampler's Name: County:

Geoff Klein **ROANE - 73** 

**Sample Matrix:** 

Water

EFO: Sampling Agency: Knoxville

**Billing Code:** Send Report To: TDEC-DWS 327.39-12 TDEC-DWS

Agency Invoiced: **Priority Date:** 

**TDEC-DWS** 04/02/2010

Date/Time Received:

03/23/2010 12:50

Received By:

Ken Hitchman

Chlorine, residual:

Conductivity: Temperature: **Dissolved Oxygen:** 

**Field Determinations** 

Other: Flow:

pH:

**CFS** 

TEST: Alkalinity, Total	METHOD: EPA 310.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	60	mg/L	3.8	10	M Chen	3/25/2010

TEST: Hardness, Calcium	ME.	THOD: SM 350				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	47	mg/L	0.7	1	M Chen	3/24/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003520003

**Project Name:** 

Sample Description:

Rockwood WTP

Sampler Project Name: Raw

Project Site No.:

Station No.:

Date/Time Collected:

03/22/2010 09:25

Sampler's Name:

Geoff Klein

County: Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency:

TDEC-DWS

Billing Code: Send Report To: 327.39-12 TDEC-DWS

Agency Invoiced: Priority Date:

TDEC-DWS 04/02/2010

Date/Time Received:

03/23/2010 12:50

Received By:

Ken Hitchman

**Field Determinations** 

pH:

Chlorine, residual:

Conductivity: Temperature:

**Dissolved Oxygen:** 

Other:

Flow:

**CFS** 

TEST: Alkalinity, Total	ME <sup>-</sup>	METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	76	mg/L	3.8	10	M Chen	3/25/2010

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	58	mg/L	0.7	1	M Chen	3/24/2010

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit** 

K00003520004

**Project Name:** 

Sample Description:

Rockwood WTP

Sampler Project Name: Finish

**Project Site No.:** Station No.:

Date/Time Collected:

03/22/2010

**Dissolved Oxygen:** 

Other:

Flow:

pH:

Conductivity: Temperature:

**Field Determinations** 

**CFS** 

Chlorine, residual:

09:30

Sampler's Name: County:

Geoff Klein **ROANE - 73** 

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville TDEC-DWS

**Billing Code:** Send Report To: 327.39-12 **TDEC-DWS** TDEC-DWS

Agency invoiced: **Priority Date:** 

04/02/2010

Date/Time Received:

TEST: Alkalinity, Total

03/23/2010 12:50

Received By:

Ken Hitchman

METHOD: EPA 310.2

MDL MQL ANALYZED BY: DATE **ANALYTE RESULT** UNITS 78 mg/L 3.8 10 M Chen 3/25/2010 Total Alkalinity

**TEST: Hardness, Calcium** METHOD: SM 3500-Ca D MDL MQL ANALYZED BY: **DATE RESULT** UNITS **ANALYTE** 0.7 1 M Chen 3/24/2010 59 mg/L Calcium hardness

J - Estimated value between MDL and MQL

**MDL - Method Detection Limit** 

**MQL - Method Quantitation Limit**